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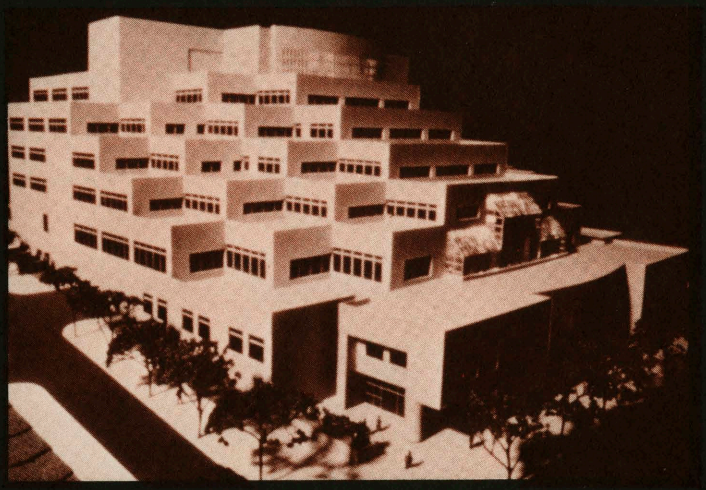
University of Tennessee Library Lectures, 1982-1984 (no. 34-36)

LIBRARY LECTURES

The University of Tennessee, Knoxville

Numbers Thirty-four, Thirty-five, and Thirty-six
1982–84



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Edited by Miriam Deutch
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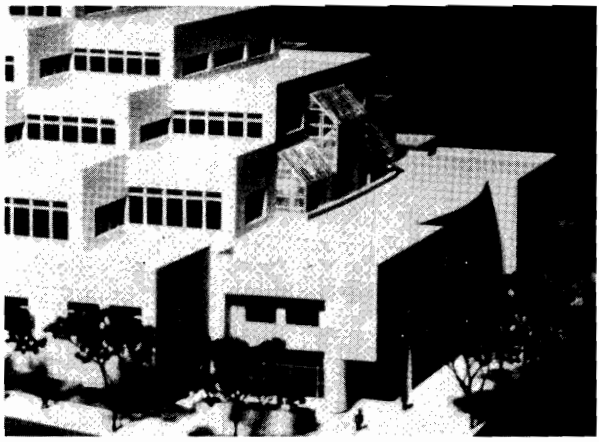

On cover and above:
Architect's models of the new central library
now under construction at
the University of Tennessee, Knoxville.

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Foreword

The University of Tennessee Library Lecture Series was initiated by William H. Jesse, Director of Libraries from 1943 to 1970, as a means of providing a "formal treatment of major library problems." Since its inception in 1949, a distinguished librarian or scholar has been invited to address current problems as well as to identify future trends in libraries. In the thirty-fourth lecture, Kenneth G. Peterson cautions that the application of new technologies in academic libraries threatens to change traditional values in librarianship. He suggests methods for maintaining a balance between the traditional values and the new technology.

The prestigious Lecture Series was expanded in 1983 to become the University of Tennessee Library Day, and now includes the library lecturer, speakers from allied professions and area librarians in an exchange of ideas. The change was designed to encourage an in-depth examination of issues and challenges facing libraries. The theme of the first annual "Library Day" was "The Status of Library Automation in Tennessee and Surrounding States." The featured speaker, Frank P. Grisham, executive director of SOLINET, provides a regional broker's view on the implications of local library automation for statewide and regional cooperation. Mr. Grisham explains that the direction of library cooperation has been influenced by economic constraints, technological advances and user needs, although he predicts that the recent proliferation of local library automation systems will have the most dramatic impact on the nature of cooperation.

William J. Welsh, one of the most innovative leaders in the library profession, delivered the thirty-sixth lecture. Mr. Welsh describes the development and implementation of his two great conservation projects at the Library of Congress, the mass de-acidification treatment and the optical disk pilot program, designed to help conquer the intractable problems of time and space.

Miriam Deutch
July, 1985

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Library Lecture Number Thirty-four
University of Tennessee Library, May 27, 1982

by Kenneth G. Peterson

Dean of Library Affairs
Southern Illinois University, Carbondale

Kenneth G. Peterson, an accomplished administrator with experience at two major academic libraries, is keenly aware of the special problems and future directions of research libraries. Dr. Peterson's numerous journal articles, essays and service as series editor for Association of College and Research Libraries Publications in Librarianship reflects his interest in the new developments in academic libraries. His books include *The University of California Library at Berkeley, 1900-1945* and *An Introductory Bibliography for Theological Students.* He is also a noted reviewer of scholarly publications. Since 1976, Dr. Peterson has regularly presented papers and has served as a panelist at the national conferences of the Association of College and Research Libraries, the Association of Research Libraries, the American Library Association and others.

Dr. Peterson began his library career in 1962 on the staff, and later as head librarian, at the Pacific Lutheran Theological Seminary in Berkeley, California. In 1968 he became associate university librarian at the University of Virginia at Charlottsville. He has been dean of library affairs at Southern Illinois University at Carbondale since 1976. Prior to his library career, Kenneth Peterson served as a Congregational minister.

Born in Brooklyn, New York, Peterson received a B.A. in history (1946) from Drew University and a M.Div. in theology from Yale University (1949). He continued his education at the University of California, Berkeley, where he received an M.L.S. (1963) and a Ph.D. in library science (1968).

Many honors and awards have been bestowed upon Dr. Peterson in recognition of his accomplishments. In 1963 he became an honorary member of Phi Kappa Phi at the Southern Illinois University Chapter. The Professional Secretaries International, Carbondale Chapter, presented Dr. Peterson the Boss of the Year Award in 1982. He received a doctoral fellowship from 1966 to 1968 and departmental citation for outstanding accomplishment in 1964 at the School of Librarianship, the University of California.

Dr. Peterson's contributions to professional organizations are impressive. He has chaired various committees in the Association of College and Research Libraries division of ALA and is an active member of both the Association of Research Libraries and the Center for Research Libraries. He served on the editorial board of the *Journal of Academic Librarianship* from 1978 to 1981. As a member of the board of directors of the Midwest Region Library Network from 1976 to 1984, he helped to influence the direction of network development. Presently, Dr. Peterson is an editorial board member of *Research Libraries in OCLC: A Quarterly.* He is also active at the state level in the Illinois Library Association.

New Technology and Traditional Values: Maintaining Balance in Academic Libraries

Some time ago a colleague reported having seen an article in a professional journal entitled, "Technology Is the Answer. What Is the Question?" Although intentionally facetious, that title identifies a basic issue being faced by librarians along with professional people in many other disciplines. Technology is exerting an ever-increasing influence upon our lives, our work, our social institutions, and even the way we think. With the development of newer technologies, the kinds that only a decade or two ago were still on the horizons of our imagination, a fundamental question comes to mind. Are technological advances determining the directions of our lives, or are they instruments to be used in advancing humanistic values?

New technology as it relates to libraries was the subject originally proposed by your committee for this lecture. Although I am interested in how technological advances can benefit academic libraries, it seemed more appropriate to me to consider new technology along with traditional values in librarianship in an effort to suggest some ways for maintaining balance between the two.

There are justifications for this approach, stemming from professional areas other than librarianship. In the field of medicine, for instance, technology has exerted tremendous influence through the use of electronic instruments to monitor bodily functions, to measure brain waves, and even to perform surgery by means of lasers. Yet, increasing interest also in the "family practice" concept and the interaction between psychiatry and medicine reminds us that concern for individuals and the value of human life, as rooted in the Hippocratic oath, is still essential to the medical arts. New technologies in the form of computer-aided instruction and sophisticated video-based delivery systems designed to reach mass audiences are having a major impact on the field of education. Yet, theories of instructional development and increasing interest in how people

learn, stemming from the contributions of Piaget, Perry, Kohlberg, and others, remind us that concern for people remains at the core of educational activities. In the area of business management, where pragmatism has traditionally been dominant, the use of computers and machine based information systems and equipment for the telefacsimile transmission of data are all well advanced. Yet, review of university course descriptions in the fields of marketing and business administration reflects significant interest in the psychological and sociological forces that affect people as consumers. Programs and services in the business field are clearly being tailored to meet human needs.

EVOLUTION OF LIBRARY TECHNOLOGY

Depending upon how broadly or narrowly the parameters are set, our discussion of technology in libraries could begin with the use of cuneiform tablets in ancient Mesopotamia or the making of papyrus along the Nile. One could hardly question that the invention of printing from movable type in the mid-fifteenth century was the most influential technological development prior to the twentieth century in relation to recorded information and libraries. While we look back upon that event as a major accomplishment, there may have been some scholars and librarians at that time who viewed the printing process with skepticism and suspicion. During the fiftieth anniversary of Dartmouth's Baker Library a few years ago, President John G. Kemeny commented about the impact of Gutenberg's invention upon the production of beautifully illuminated manuscripts in the medieval scriptorium. "Can't you imagine the horrendous reaction that must have come when a purely mechanical tool was invented to replace this marvelous piece of hand-written work, and when instead of having these beautiful manuscripts, something called the 'printing press' would turn out, in huge quantities, substitutes for these same manuscripts?"[1] Yet, research libraries as we know them today would not exist without the technology of printing.

Other devices, such as typewriters and duplicating machines, have served many useful functions in libraries by replacing slower and less precise manual methods for recording information. Examples can be found of some library technologies, however, that were less successful than the printing press, the typewriter, or the duplicating machine. Are there any librarians who have not heard at one time or another about Charles C. Jewett's plan at the Smithsonian Institution to use clay molds to produce printing plates for catalog records? The unfortunate failure of that mid-nineteenth century effort led William Frederich Poole to refer to the project as Jewett's "Mud Catalogue."[2] Perhaps less well known was the effort of Alexander Joseph Rudolph to invent a mechanical device to store and display bibliographic records. The Rudolph Continuous Indexer, which was intended to combine the best features of book and card catalogs, was dis-

played at the World's Columbian Exposition in 1893. Unfortunately, the inventor had not anticipated that a single user could monopolize the machine while searching for information, thus frustrating other users.[3] Even though the Indexer was not widely adopted by libraries, a model can still be seen at Chicago's Newberry Library.

Photography is an area of technology that has been extensively used to benefit libraries. Although the proçess was first invented during the sixteenth century, it was not until the 1830s, when Louis J. M. Daguerre used mercury vapor to record an image on a light-sensitive plate, that the modern process of photography really began. Subsequent developments during the nineteenth and twentieth centuries brought the science and technology of photography to high levels of perfection. In a recent journal article, Allen B. Veaner provides a brief historical sketch of how photographic processes have been used in libraries.[4] As early as 1912, for instance, manually-operated photostat machines that produced between twelve and twenty copies an hour were being used at the New York Public Library. The development of microfilm in the late 1930s led in time also to microfiche, ultrafiche, and computer-output-microform. Complementing photography, electro-static processes for producing multiple copies from hand-written or printed materials, as well as from microforms, have resulted in major changes both in how libraries operate and how they are used. Experiments have been conducted with the telefacsimile transmission of printed information which involve a combination of technologies operating in conjunction with well developed communications systems. If telefacsimile transmission becomes economically feasible, it will have far reaching effects upon plans for cooperative collection development and resource sharing among libraries. Television and advanced communications systems are also greatly affecting library activities. Developments in the use of videotext and teletext systems, such as those operating in Columbus, Ohio, will certainly change the way libraries operate in the future.

The invention of the digital computer in the 1930s and its development since the 1950s is, of course, the most important technological advancement affecting libraries in this century. It is hard to think of any library activity or service that is not being changed by computer applications. Beginning with early experiments involving basic library functions, such as circulation, acquisitions, and accounting, computer systems are now used extensively for bibliographic control and cataloging, interlibrary loans, direct ordering, online bibliographic searching, indexing and word processing. Through a combination of computer and reprographic technologies the prospect of publication-on-demand for books and journal articles is becoming increasingly likely as a means of satisfying information needs. Until recently many librarians remained skeptical about predictions that the entire contents of books would be stored in computers. Yet, the development of the silicon chip, along with extremely high density digital and video discs,

has revolutionized computer technology, and increased expectations that substantial portions of library collections may be accessed by means of terminals either within the library or at remote locations. Research on lasers is another area in which major technological developments can be expected. The day may not be too far off when laser beams will replace electric impulses sent over wires as a means of transmitting information. Increased use of satellites will also greatly change communications systems, resulting in vastly improved library networks and even enabling libraries to have instantaneous access to information. While these comments may begin to sound like something taken out of "Star Wars," based upon what has happened in the last ten to twenty years, they are hardly unreasonable.

Considering the overall ramifications of new technologies on libraries, two conclusions may be drawn. First, while developments will continue to take place in individual technologies, such as photographic and electrostatic processes, communications and laser systems, and computer capabilities, the interactions and combined effects of these technologies will propel us even more quickly into a new age of library and information science. Perhaps if someone wanted to write a science-fiction work related to the libraries of the future, it could be called the "Symbiotic Wave." The inevitable increased interaction of technologies will bring about more interaction in library activities and functions. As computer people talk about integrated systems for automating libraries, librarians may increasingly need to view functions no longer as separate activities, but as parts of an integrated whole activity. Moves in this direction can already be seen in the development of the OCLC (Online Computer Library Center) sub-systems for interlibrary loans, serial control, acquisitions, and accounting which have been built upon the foundation of OCLC's cataloging system. Second, both the capabilities and the costs of new technologies will facilitate much greater interaction among libraries through network relationships and bibliographic utilities. Although librarians have been justly proud of their record in cooperation through the years, networks and utilities provide formal structures and systems of governance which enable libraries to accomplish together what they could not accomplish separately. Considering the resources and expertise necessary to support technological developments, libraries have learned that they cannot "go it alone."

Concerns and fears have been expressed by some librarians, however, that the new technologies have had negative as well as positive effects upon libraries. In a recent article in *Library Journal*, William F. Birdsall reminds librarians that, as they move "inevitably towards a highly professionalized technological society," they must also "be sensitive to a variety of social change and opportunities and responsive to the informational needs of all segments of society."[5] In an editorial which appeared in the same issue of *Library Journal*, John Berry expressed concern that dependence upon electronic technology for communication and access to information may

make our society more vulnerable than earlier societies. Referring to the imposition of martial law in Poland which has resulted in complete control over telecommunications, Berry asserts that "the ultimate danger lies in becoming so dependent upon this or that technology that the plug can be pulled or the switch thrown to limit our access to the information."[6] While recognizing the values of technology to libraries, Ellsworth Mason was recently quoted as saying there have been "major losses in control over our own operations caused by dynamics of the computer in our libraries, in its connections to networks, and in national computerization policies largely uncontrolled by libraries."[7] In an address to the second Association of College and Research Libraries National Conference held in Minneapolis last October, Professor Paul A. Lacey of Earlham College recognized the values of new technologies to libraries but also indicated some apprehensions from the point of view of a humanist. His concerns were expressed as he discussed three questions: "1. Will the new technology put us out of meaningful and valuable jobs? 2. Will the fine old crafts we practice be cheapened or lost as a result of the new technology? 3. Will the new machinery alienate us from our work and from our fellow workers?"[8] These concerns cannot be disregarded or even taken lightly. Keeping them in mind, let us consider some of the traditional values in academic libraries in an effort to balance our perspectives.

IDENTIFYING TRADITIONAL VALUES

If one were to conduct a survey to determine what are the traditional values for academic libraries, the results would undoubtedly be both broad and varied. Faculty members would most likely stress the importance of collections. A high ranking university administrator reported recently that, in conversation with a group of faculty members who were discussing how budget reductions might affect the library, it was concluded that support for acquisitions should be the first priority even if it resulted in decreased services and shorter hours. Students would express different views. In discussions about library matters they almost invariably suggest keeping the library open longer and providing more help in finding information and materials. Librarians would add yet another dimension by stressing the need to classify and catalog collections in order to maintain adequate bibliographic control and to provide reference and instructional services. In a description of recent efforts at the University of California at Berkeley to write a collection development policy, Dorothy A. Koenig wrote, "The stated objective of the library regarding collections is to identify, acquire, organize, and disseminate all forms of recorded information which are pertinent to existing research and instructional programs."[9] In that short sentence we find a very comprehensive description of the academic library's traditional values.

Identifying and acquiring all forms of recorded information presupposes first of all the value of books — along with manuscripts, documents, microforms and non-print materials which comprise library collections. Books are basic to libraries. When people think about libraries, what comes first to mind? Books — rows upon rows of them, ready to be consulted or read. Gordon Ray, as president of the Guggenheim Memorial Foundation, expressed the views of many people when he said, "Those who seek to promote substitutes for books or to make libraries other than book-centered institutions have never comprehended the extent to which belief in books remains a living faith, both to general readers and to scholars."[10] Robert B. Downs, emeritus dean of libraries at the University of Illinois, wrote, "Prophets of doom maintain that books are an obsolete, vanishing artifact, replaced by such mass media as large-circulation magazines and newspapers, telephone, telegraph, film, radio and television. The validity of this belief is questionable."[11] Dean Downs cites statistics for book production and sales which showed purchases averaging roughly seven books per capita in the United States in the mid-seventies, three times higher than for the late-twenties. In 1977, the United States Congress took action establishing the Center for the Book at the Library of Congress in order "to focus attention on that medium's traditionally important role in the communications process."[12]

When the strengths of academic and research library collections are measured, the size of collections is the figure most often cited. Yet, to judge the richness of holdings in terms of support for scholarly activities, consideration turns to a library's special collections. What are the subject areas in which a given library is distinguished? Or, to turn the question around, where does one go to do research related to primitive art, or James Joyce, or Ulysses S. Grant, or Icelandic literature, or geochemistry, or Mozart, or Thomist philosophy, or numismatics, or Shay's rebellion? There is untold wealth of information available in libraries. Systems of bibliographic control have long been recognized as essential to locating that information. Thus, attention is directed not only to acquiring books and building collections, but also to the systems and processes for classifying and cataloging materials, developing union catalogs, compiling indexes and finding lists, publishing bibliographies and descriptive guides — all of which bespeak the traditional values of librarianship.

There is yet another important dimension to be considered. Libraries are not solely repositories or archives for the storage and preservation of information and materials. They are to be used to meet the needs of students, faculty members, researchers and, in fact, any people who want access to their resources. But, libraries and their collections have not always been readily accessible to users. Until a few centuries ago many libraries were kept locked and those who did manage to gain access were likely to find many weighty books chained to the shelves. Among the descriptions of

colleges in the United States it is interesting to note that, until fairly late in the nineteenth century, libraries were usually open only a few hours each week and often special permission was required from the institution's president for students or faculty members to withdraw books. Edward G. Holley reminds us that "The rise of society libraries has been noted as an example of how poorly the college library before 1876 served the students."[13] The situation has certainly been reversed in the twentieth century as academic libraries have steadily increased their hours of service and placed relatively few restrictions on borrowing, and as the philosophy of open access has been emphasized. The development of reference service, bibliographic instruction, research assistance and consultation about special scholarly resource needs has come to characterize the traditional values of librarianship and to complement the amassing of collections and development of bibliographic control.

While the traditional values of academic libraries still have validity, it would be short-sighted not to recognize that they are being strained. Knowledge is increasing at exponential rates and it is increasingly difficult to maintain traditional systems for bibliographic control. The costs of publishing books and journals are increasing at faster rates than our inflation-driven economy. Libraries are filling up and few institutions have funds to construct new buildings or major additions to existing ones. Few libraries have sufficient staff anymore to continue the labor-intensive kinds of technical service activities that were performed in earlier decades. Faced with these realities, libraries must change and librarians must adapt to different ways of fulfilling their professional tasks. Thus, it is inevitable that libraries will resort more to automation, which involves new technologies; to cooperation, which involves networks and utilities; and to resource sharing, which will affect collection development and access services. Along the way many options will need to be explored, alternatives considered, and compromises made. In the end, what will matter more than anything else is that libraries strive to maintain balance between the new technologies on the one hand, and the older traditional values on the other. How can this be accomplished?

BALANCING THE OLD WITH THE NEW

To begin with, academic libraries and librarians need to understand what their mission is and to decide what goals and objectives will enable them to fulfill that mission. Consider an analogy from a *New York Times* article in 1979 entitled, "A Data Conglomerate," by Edwin McDowell. "The old marketing line in the Harvard Business School is that the problem with the railroads is they always thought they were in the railroad business, instead of transportation." Referring then to a report about McGraw-Hill purchasing the Data Resources Corporation, he continues, "McGraw-Hill isn't

about to make that mistake — they realize they are in information and communications, not just publishing. They have the data in-house, and nobody knows whether it will be more efficient in the future to deliver it in books made of paper or through other methods."[14] There is a pretty clear correlation here for us to consider — namely that academic libraries and librarians are in the information, education, and scholarly research business. As such, it is important that we have clear understanding about the needs of our users, the instructional programs on our campuses, and the areas in which our resources will be in demand to support the creation of new knowledge.

Unfortunately, because we become weighed down by daily problems and the performance of very specific tasks, it is sometimes difficult for us to "see the woods for the trees." A recent issue of the *American Scientist* has a humorous cartoon showing a rather fearful man cringing in an alcove as a man and woman pass him in the hallway. In the caption the woman says to her partner, "Don't mind Ashley. After looking through a microscope all day, anything large startles him."[15] Maybe librarians become bogged down in minutia and limited in their perspective by the amounts of paper that cross their desks, or the numbers of books to be cataloged, or the reports to be compiled, or the circulation problems that need to be solved, or the endless stream of relatively routine questions that are asked. We need to look up from our desks more often and out of our windows (if we have them) in order to understand why the library is important to the university, how it supports our faculty colleagues in their classroom teaching activities, what it can do to help students learn, and when it can meet special needs related to research endeavors. Among the objectives librarians need to pursue, Richard M. Dougherty has suggested, is that of building bridges across the campus. "I am convinced," he writes, "that academic librarians must establish closer relationships with other campus power structures. We will need the assistance of faculty and administrators to remedy the problems confronting libraries."[16]

In the process of clarifying the library's mission and of setting goals and objectives, it is important that the library and its staff have a sense of identity. There are fundamental differences between academic-research libraries and public libraries, or community college learning resource centers, or libraries that serve industrial corporations, or libraries of government agencies, or libraries in schools, hospitals, and correctional institutions. Only as university librarians come to understand and develop relationships with the academic programs on their campuses and distinguish what kinds of materials and services are needed to support undergraduate and master's level instruction, doctoral programs, and post-doctoral research, will they also understand their mission and be able to set appropriate goals and objectives. By establishing their own identity and feeling confident about their own mission, academic librarians will be in a position to decide

how to balance new technologies with traditional values.

Second, librarians need to acquire and maintain sound knowledge in the academic disciplines as well as in the practice of traditional librarianship and the application of new technologies. Almost twenty years ago *Library Journal* published a little piece by Ralph E. Ellsworth entitled, "Librarians Need to Know More." In it he wrote, "For university librarians I am reasonably certain that our chief difficulty will be the fact that few of us are going to know enough about what the scholars on our campuses are doing to be able to give adequate library service.... It is clear to me," he continues, "that we should be staffing our university libraries with librarians who have Ph.D.'s in a subject field, plus a library education that places heavy emphasis on bibliography and analysis of the literature of scholarship."[17] Although it might be difficult to justify going as far as Ellsworth does in asking librarians to acquire doctoral degrees, it is apparent to those who have worked in university and research libraries that some of our colleagues are not sufficiently prepared academically. It must also be noted in all fairness, however, that salaries for librarians have not been comparable with those of people in other disciplines. This situation needs to be remedied if we are to raise academic expectations.

Recently I heard the director of a well-known university press allude to the view held by some that those who cannot quite make it as scholars in the academic world often turn to librarianship or publishing as an alternate career. Although librarians are justifiably sensitive to comments of that kind, it behooves us to ask whether our academic preparation is sufficient or whether further preparation in the humanities, social sciences, and physical sciences should be required. Based upon his many years as director of the Harvard University libraries, Douglas W. Bryant said, "It has long been a belief of mine that we must give more attention to competence in scholarship and research on the part of many of the individuals making up the staffs of academic and other research libraries.... Thus, it seems to me," he continues, "we are going to have to pay more attention within libraries to the need for interpreting collections, for assisting scholars and other users in uncovering the intellectual content imbedded in the books and other materials that comprise the holdings of research libraries."[18] Similar concerns were expressed by Sir Frank Francis, who served for many years as director and principal librarian of the British Museum. Delivering the Chambers Memorial Lecture at University College, London, in 1968, on the subject, "The Scholar as Librarian," he said, "It is the young men and women of high academic achievement and competence who are responsible for ... the correct categorization of library work. Libraries need their scholarship, indeed they depend upon it and they should foster its development.... It is in my view imperative that full scope should be given them for the exercise of their academic ability."[19]

While most librarians keep abreast of developments in library and infor-

mation science, and while many are also acquiring expertise in the new technologies, how well informed are we about changes and new directions in other fields? In the field of English studies, for instance, are we aware of the turn-around from traditional literary and textual criticism to "structuralism" as the basis for much new literary research? Or in linguistics, are we aware of the effect of quantification of word usage or of anthropological studies upon our understanding of language? Or in music, do we realize the impact of the computer upon both composition and performance? Or in economics, do we recognize specializations that have developed under strange sounding headings such as macro-economics and micro-economics? Or in biochemistry, do our impressions of genetic engineering go beyond fear-based concerns about human distortions to an appreciation of research affecting immunology or transplant surgery or food production? Or in engineering and physics, have we grasped the importance of pulsing lasers as conveyors of light and energy in fields as diverse as communications and surgery? Granted, librarians cannot be experts in all these fields nor is that what is suggested. But we do need to maintain broad academic interests, and to read materials outside our own professional area and to seek opportunities to discuss with academicians on our campuses the new directions in their disciplines.

Third, balance between new technologies and traditional values requires appreciation for people and recognition that humane concerns are central to our professional pursuits. In an article entitled "Professionalization and Bureaucratization," published some years ago in the *American Sociological Review*, Richard H. Hall described the attitudes and attributes that characterize professionals.[20] They include responding to a sense of "calling," serving others, developing relations with colleagues, believing in the need for self-regulation, and resisting pressures from outside that would compromise professional integrity. It is interesting to note that all of these descriptions, either directly or indirectly, revolve around concern for people. They also relate quite definitely to the field of librarianship.

Librarians need to know the people whom they serve and something about their needs. It is easy to become acquainted with faculty members who are frequent users of our collections, or those who place heavy demands upon our services, or those who complain about library policies or practices with which they may not agree. There are other faculty members whom we need to get to know — the newly appointed ones who may be struggling with heavy teaching assignments, or those who are striving to meet tenure or promotion expectations, or those who are moving into new areas of research where librarians can provide helpful support. We see masses of students passing in and out of the library every day, but we also need to look beyond the crowds to see those who do not know what to look for because they don't yet understand their needs. No less important, in terms of dealing with people, are our relations with colleagues who may

need reassurance in the face of insecurity, encouragement because they are frustrated, or befriending because the organization is large and seems uncaring. To this degree, and in an informal sense, librarians may take on the role of mentors-at-large. Based upon a study of "ARL Directors as Proteges and Mentors," David S. Ferriero describes some of the qualities of mentors as they apply to library directors — being aware, providing encouragement and support, opening doors, having an ability and willingness to listen and to counsel, displaying patience and enthusiasm, and fulfilling a teaching role.[21] These qualities are not restricted to library directors, but may apply to librarians at any level or in any area of service. Moreover, in striving to develop these qualities we should also acquire a helpful sense of perspective about the traditions of our profession rooted in those from whom we have learned and the challenges of our profession directed toward those we train to meet the needs of the future.

FLEXIBILITY IS ESSENTIAL

Finally, in seeking balance between new technology and traditional values we need to remain flexible, recognizing that very few (if any) areas of life or work can successfully resist change. This is not to say that time changes all values, or that no values have been change-resistant. We find security in the permanence of values, such as honesty, integrity, fairness, diligence and importunity. We need flexibility, however, in applying these values to a myriad of problems in different times, under different circumstances, and with different people who have differing needs. In an article entitled "Coping with Turbulence," Michael Sanderson suggests that "to cope with the turbulent times facing libraries a more flexible and powerful problem-solving and policy-setting methodology is called for." He calls for analytical, intuitive, imaginative and synthesizing abilities to be cultivated as personal skills because we are in an era of dynamic flexibility. Thus, according to Sanderson, "the emphasis returns to the fully competent person of broadly-based skills selecting and organizing wise and tactically flexible strategies to deal with anything from acquisitions or serials control to the ever-fluid library funding position."[22]

Maintaining flexibility means that librarians should not seek security by perpetuating traditional values that have become out-moded; nor resist the advances being made by those outside librarianship who are interested in new means for the dissemination of knowledge; nor demean the information-handling capabilities and versatility of machines. On the other hand, maintaining flexibility also means that the advocates of new technology should not discount the centrality of scholarly endeavors to academic and research libraries; nor allow the legitimate needs of users to be over-shadowed by the dictates of automation or systems; nor discount the value of libraries as centers for the cultural and esthetic, as well as the

informational, desires of a civilized society. Flexibility involves being broad-minded and inclusive in our outlook, engaging in a free exchange of ideas without becoming defensive, accepting differences of opinions without hostility, participating in the sharing of activities in good faith, recognizing that failures may sometimes occur in the name of progress, and striving for accomplishments in service through cooperation rather than competition.

A cartoon appeared in *Publisher's Weekly* some months ago that shows a group of board members sitting around a table in the headquarters of the Outright Nuclear Power Company. Most of the people appear glum, except for one smiling soul who says, "First we have to convince the people that good health isn't everything."[23] Could we not envision a group of tradition-bound faculty members sitting around a table looking glum as one person says, "First we have to convince the library director that technology isn't everything?" Or the counterpart, a group of computer experts sitting around the table looking glum as one person says, "First we have to convince the librarians that books aren't everything." There are substantial reasons to support greater reliance upon new technology, and there are substantial reasons to support continued adherence to traditional values in librarianship. There is little doubt that the strongest case can and needs to be made for maintaining balance between the two as academic libraries move into the future.

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Library Lecture Number Thirty-five
University of Tennessee Library, April 27, 1983

by Frank P. Grisham

Executive Director
Southeastern Library Network, Inc.

Frank P. Grisham, a leader in automation and cooperative efforts in the Southeast, has been executive director of the Southeastern Library Network (SOLINET) since 1982. He is credited with leading SOLINET into a new period of growth. Mr. Grisham established the Retrospective Conversion project, developed the Local Access to Management of Bibliographic Data and Authorities (LAMBDA), and initiated a preservation program for SOLINET members.

In 1951, Mr. Grisham started his library career as a library assistant at the Methodist Publishing House in Nashville. For the next two years he served as a librarian in the Religion Section of the Vanderbilt University Library (formerly Joint University Libraries). He then moved to Birmingham, Alabama, to become director of religious life at Birmingham-Southern College and associate minister at McCoy Methodist Church in 1956. Grisham returned to the Vanderbilt University Library where for the next twenty-six years he held various positions before becoming director in 1968.

Grisham received an A.B. in history (1949) from Birmingham-Southern College and an M.Div. (1952) from Vanderbilt University Divinity School and an M.L.S. (1958) from George Peabody College for Teachers.

He is an active member of professional organizations at the national, regional and state levels. He was an elected delegate to the White House Conference on Library and Information Services in 1979 and he has served on the WHCOLIS task force since 1980. Mr. Grisham was a member of the board of directors of the Association of Research Libraries and served on its Office of Management Studies Advisory Committee from 1977 to 1982. While director at Vanderbilt, he served on the board of directors at SOLINET and was chairman of the board from 1978 to 1979. Mr. Grisham served on the Tennessee Advisory Council on Libraries for nine years and was president of the Tennessee Library Association in 1976.

Local Library Automation: Its Implications for Statewide and Regional Cooperation

The intent of this address is to discuss the implications of local library automation for statewide and regional cooperation. I accepted the invitation to deliver this prestigious lecture early in my new career as executive director of the Southeastern Library Network, Inc. (SOLINET); for if I am to speak with authority, I should not wait much longer. With more experience, a few more scars, and a bit more maturity, I will surely consider myself less of an authority. For the longer we labor in this changing world, the more we realize how little we know and how difficult it is to project future trends. Sometime soon, I will probably succumb to that reticence which results from an overload of information. But for the present, I maintain an optimistic and fairly simplistic perspective on the issues before us today.

I shall omit the usual prologue and assume that each of you has the proper definitions in mind regarding networks, local library automation, and cooperation. Most of you in the audience come from academia, as I do; so we shall be looking at these concepts from a similar perspective. Though important, philosophical definitions will only clutter the arena in this short time I have with you today. Neither is it my intent to provide a historical approach, tracing the steps which brought us to where we are, as important as these are to our understanding. Instead, I shall take a "snapshot" — a look at the world around us, what the issues are, what the trends indicate, and who the players are. The scene is changing so rapidly that my snapshot will be out of focus before it can get into print. Tomorrow will be different, and our interpretation must, therefore, be constantly updated.

There have recently been several very important statements on the subject of networking. Currently, one cannot adequately understand library automation without some knowledge of Henriette Avram's paper, "Network-Level Decisions: Basis and Key Issues," presented to the 1981 Pittsburgh Conference on "The Challenge of Change — Critical Choices for Library Decision Makers."[1] Richard DeGennaro has again provided

great insight into the issues in his article on "Library Automation and Networking: Perspectives on Three Decades."[2] The background papers on "Research Libraries in the Online Environment" produced for the ARL/CARL Membership Meeting in May 1983 contribute much to a reader's background.

THE IMPETUS FOR LOCAL SYSTEMS

As librarians, we are turning our attention inward, away from any grand national design, and focusing, instead, on our own institutions, on our individual libraries. John Naisbitt writes in *Megatrends*, "The single most dominant trend we find in our research is the rapid and extensive process of decentralization. . . . Now the society is creating decentralized alternatives to almost every centralized form of organization."[3] Computer technology supports this trend, for it places ever-greater capacity at the disposal of the users. This trend is being reflected in the appearance of the word processor, "smart" terminals, and personal microcomputers. Some may refer to this trend as "decentralization," while others call it "distributed processing." Whatever it is called, it is the concept that shall bring the most dramatic change to our current organizational relationships.

How has this trend come about? As has been noted elsewhere, local systems (as primitive as they were by today's standards) dominated the 1960s. The 1970s brought the multitypes, the multipurpose networks. The 1980s are bringing a return to the local system, but to a different kind of local system. The trend for the 1990s is anyone's guess. We have moved from "minis" to "maxis" and now to "micros."

The direction of library cooperation has been influenced by three factors: economic constraints, technological advances, and user needs. Even though most aspects of our professional lives are affected by the technical developments, I am beginning to conclude that financial pressures control our destiny much more than we like to admit. We could not, in the sixties and seventies, individually afford the online catalog, so we banded together and formed networks. But as computer technology becomes more affordable, libraries are purchasing local systems that give them greater autonomy. The effect of economics on library cooperation must not be overlooked in our planning.

Technological advances are also shaping the direction of library networking. The American dream is changing from one of having a car in every garage and a chicken in every pot to that of having a personal computer on every desk. Computer literacy is a topic of much discussion. More and more colleges are requiring that incoming students have their own computers. The micro will be as revolutionary as was the television.

What has all of this to say about the subject I am to address? Technology is enabling us to become more independent of the large multitype library networks. The benefits of automation may be had within your own walls or, at least, in concert with your immediate neighbors. Decentralized networks can guarantee local autonomy and make your library the core around

which your automated program evolves. Within the past two years, DeGennaro observes, there has been a "rapid proliferation of a variety of powerful and versatile mini- and microcomputer systems in individual libraries and clusters of related or affiliated libraries."[4] Rowland Brown, president of OCLC (Online Computer Library Center), has also acknowledged that networking seems to be moving toward smaller and special-purpose groupings, and he predicts that the primary growth in library automation in the 1980s will be in local options — either institution-based, or increasingly, clustered or shared systems.[5] Emerging from this scene is an increasing number of systems aimed primarily at resource sharing through database development; local clusters, state networks, and nationwide cooperation among special libraries are rapidly being formed.

The trend toward local systems is also gaining impetus from users' needs, and these needs will become steadily greater as technology becomes more sophisticated. Users routinely want access to information on holdings, location, and circulation status. Increasingly, scholars expect to locate and retrieve such information with their personal computers. The role of the library, changing in response to user needs, is likely to expand further because of a grant the Council on Library Resources (CLR) has awarded to the Association of American Publishers to establish industry-wide standards for preparing and processing electronic manuscripts.[6] This development will have a tremendous effect on the role of the librarian, particularly the reference librarian, but that is another lecture. It will force the design of a distributed processing structure. Your local system will be the first level of access, with linkages to other levels readily apparent to you. The growing need and ability of the individual to create, store, and distribute information will have a revolutionary impact on the local academic library. Information will be dispersed, even around your campuses. You will be required to communicate with other centers on campus and others within your consortium, as well as with the commercial databases. I predict that, on most of your campuses, there will develop a mini-network with cable connections first linking traditional library information and, eventually, transmitting all sorts of data needed for the daily operation of a college or university. We should begin preparing for this revolution.

Another reason for the development of the local system is that it follows the concept we all promulgated a while back: design systems to be as close to the end user as possible. This is advisable for many reasons, but chief among them is your need to exercise more control over your own computing destiny. No single national system can possibly handle the transaction load of the next half decade. Activity on the OCLC system is reaching 11 million transactions per week or (as I figure it) around 40 per second. According to the last count I saw, the OCLC database included 125 million locations for 8.5 million records. I believe you are aware of the system performance problems this volume of activity is creating at the national level, and you know the devastating effect downtime and poor response time have on workflow. The local system gives you more control over such occurrences. Unfortunately, there is a flip side to this problem. Making you less vulnerable to single component failure may simply transfer the problem

from the computer centers of OCLC or SOLINET to your desk.

The impact of finances, technology, and user needs upon the movement toward local systems is fairly clear but we must be aware that we are building a very complex system. If we are to cooperate effectively, we must now accommodate the programs and technical capabilities at the national, regional, state, intrastate, and local levels.

STATE NETWORKING

What is happening at the state level? I have just returned from a two-day meeting on this topic with the Network Advisory Committee (NAC) to the Library of Congress. We were trying to focus on the effects the emerging state networks will have on the utilities. There is an obvious reliance on bibliographic utilities, but that could change. Even though there was not a definite conclusion, there was a strong recognition that downloading of databases may be essential and that cataloging might be more economically conducted at the state or, at least, the regional level. The new system in West Virginia has cataloging capability as, of course, does SOLINET's online system. Throughout the NAC meeting, in order to conclude how the utilities will be affected by the state networks, we kept coming back to the question, "What effect will the local system have on state systems?"

Richard Boss, under contract with the Network Advisory Committee, produced a paper on state bibliographic services. He indicated, "There are two trends which have emerged in the eighties, a proliferation of local library systems, both stand-alone and shared; and planning for online statewide databases. More than 500 libraries now participate in consortia which share a system. . . ."[7] Boss states that many libraries have reported "a doubling of resource sharing in a single year. The advantages of using a shared system for interlibrary loan instead of a utility's online database is that the former has both holdings and availability information."[8] That is, a state system enables one to find information about the existence as well as the location of library resources.

State networks may take any of several directions. At least 17 states have COM catalogs, 13 have online capability, and 11 are trying to link existing systems. Many have established online databases to include the holdings of all libraries in the state by merging archival tapes from a bibliographic utility, loading them into an online system, and promoting dial access. The most common motivation is to provide more in-state locations than are found in a utility database and to provide for participation by non-members of the utilities. These databases can facilitate the production of COM catalogs and can support interlibrary loan and retrospective conversion. Other states are in the process of developing their own statewide multifunction systems. However, such a network requires major investment to fund the necessary hardware, software, personnel, and telecommunications costs. Therefore, many states are developing shared multifunction systems by linking several existing local systems and maintaining an interface to a bibliographic utility.

Of course, this requires that all the systems be compatible with one another and with the utility. Perhaps the most developed system like this is in West Virginia, using the Virginia Tech Library System (VTLS), which has eight regional nodes and a service center. The West Virginia plan is not to create a union catalog but only to link the databases. Clearly, the technology that supports local systems provides many alternatives for the developing state networks, and will change the way local libraries relate to regional and national centers. Will local systems — interfacing with state networks — make it inviting for libraries to withdraw from bibliographic utilities? It is possible. From regionals? It is possible.

REGIONAL NETWORKING

There is no consensus about the impact local systems will have on the structure and role of the regional network. The regionals are as diverse as the state networks — each created for certain purposes and maintaining diverse service programs. However, among the 17 OCLC-affiliated networks, there is now discussion of collaborative programs apart from the networks' relationship to OCLC. Local systems and emerging technologies will require new services and priorities from the regionals.

Only a few networks make extensive use of the mainframe computer in their technical capabilities, and this resource provides special options. A regional network such as SOLINET can maintain an online database for those state networks that do not want, or cannot afford, to develop and maintain their own systems in-state. For example, SOLINET's LAMBDA service can be used as a statewide database for public access, retrospective conversion, and other resource-sharing purposes. Second, regionals may develop low-cost systems for service to small libraries. I believe this may be a major priority for those regionals with technical development capabilities. Many small libraries cannot afford to join the national utilities and they cannot afford to develop their own systems; therefore, regional networks may be the best source of some automated services for such institutions. The regional networks may be the best providers of retrospective conversion, database preparation and management. Resource sharing, in its intermediate stages, will probably take the form of regional and state programs of collections development and document delivery. In the environment of local systems and state networks, regional networks are likely to assume a major role as "switching points" between systems. Rather than developing separate linkages with an array of local, state, and national systems, each system could use the regional system as the single "gateway" to other systems.

OBSTACLES TO COOPERATION

Libraries have moved beyond the stage of "cooperation for its own sake," but they also realize that some services can best be provided cooperatively. So "option" is becoming the key word in local technical

development. If these options are to be exercised to their best advantage, there must be a means of switching between local and shared uses. Given the proliferation of automation options and the lack of coordinated planning, we could be creating an excessively bewildering labyrinth of technology. In the planning of local systems by each institution, compatibility and linkage possibilities must be carefully addressed.

Linking will not be simple. The terminal-to-computer interfaces being used now are not satisfactory because the terminal operator must know the unique protocols, commands, and screen displays of the other systems. One of the most promising linkages is computer-to-computer, particularly the emulation type being developed by the Irving Group Libraries in Colorado, in which each system has a front-end processor that translates the search at a terminal into the requirements of the other system. To each "foreign" system, the emulation device appears to be one of its own terminals. Linkage through "layering" is another alternative; it involves a hierarchy of connections. There are levels of specificity in linking. Across the top there are the utilities such as OCLC, the Washington Library Network, the Research Libraries Group, and the Library of Congress. Across the bottom there is the local system. Between the two lies the regional network which may someday play an important role in linking these multilevel systems. This role could take several forms. Regionals could provide technical or consultative advice, use of their computers, or simply encourage this development and not get directly involved. I can imagine little worse than local systems being unable to communicate. Libraries cannot stand alone; neither can computers. There is cause for hope that the Linked Systems Project being conducted by the Library of Congress, RLG, and WLN with CLR funding may offer a workable solution to this problem.

Linking involves more than interfacing the hardware and software. There must be standards, such as those being developed in the Linked System. The number of local systems, regional networks, and utilities with which we must link is formidable; therefore, the standards and protocols issues are staggering. I have read recently of a position advocating no standards because they tend to fix things more permanently than we desire. Such an attitude is naive at best and dangerous at worst.

One can hardly discuss local systems and cooperative programs without being mindful of and concerned about OCLC's efforts to copyright the database, as this may provide a most formidable obstacle to library cooperation. I believe the motives of OCLC to be honorable — those of protecting the utility's financial viability and avoiding misuse by third parties. However, I do not believe OCLC has recognized the implications of that decision, nor what the absence of further clarification is causing in the rumor mill. The most crucial problem lies in the involvement of non-OCLC members in cooperative programs that use the database. The creation of state and regional online databases may be susceptible to challenge if they are used for retrospective conversion or cataloging, and if they are shared with libraries that are not OCLC members. Such restrictions could severely

impede the development of effective resource sharing programs at all levels.

For a while, at least, telecommunications concerns may hinder the development of resource sharing programs. Telecommunications costs, readjusted because of deregulation, probably will bring a dramatic increase in the costs of local loops yet somewhat decrease the long distance rates. This may have a significant impact on any cooperative program. The costs to link across town may be too great to be justified; so we will be forced to limit cooperative programs that require dedicated lines. Cable connections may provide us an alternative in this area. The volatility of the telecommunications industry may provide an added incentive for libraries to acquire local systems and may simultaneously provide an obstacle to cooperative programs that require technical linkage.

Lastly, the challenging task we face in the years ahead is to determine which functions and services are best provided by local systems, which by commercial vendors, and which are best provided by the regional networks and national utilities. There are as yet no firm answers. There is a growing consensus that circulation, acquisitions, serials control, and the public access catalog (including subject search) will be better and more economically provided in our local systems. DeGennaro believes the idea of providing total library service in a large network is no longer plausible, yet he acknowledges that no totally integrated system is available in the marketplace.[9] We have already alluded to the possibility of adding cataloging to the local system. Utilities will continue to be a database resource but will get deeply involved in document delivery, storage, and delivery of textual and numeric data in electronic form. Some have suggested that OCLC's telecommunications network is its major asset, and this impression may lead to a redirection of a portion of OCLC's program.

The mystique of cooperation is dying. It used to be "the thing to do," so we joined networks. But now our members and prospective members want to see the cost benefit, the value added. So, SOLINET and the other regionals are going to have to plan for local systems, or they will lose their members and their financial base. Regionals must be careful to avoid redundancy. The role of regionals and the nature of cooperation will change dramatically in response to economic constraints, technical advances, and user needs; but nothing will influence it more than the local system.

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Library Lecture Number Thirty-six
University of Tennessee Library, April 5, 1984

by William J. Welsh

Deputy Librarian of Congress
Library of Congress

Deputy Librarian of Congress, William J. Welsh, is a leader in developing national library programs. Among his impressive achievements is the single largest publication project in history, the *National Union Catalog Pre-1956 Imprints.* He initiated the Cataloging in Publication program (CIP), the LC leadership role in automation, and the National Serials Data project. Through the years he has actively supported efforts toward Universal Bibliographical Control. Perhaps the greatest accomplishments of his career thus far are the two conservation projects now underway: the mass deacidification treatment to extend the life of printed material and the optical disk pilot program.

In recognition of an accomplished career, Mr. Welsh has been awarded numerous honors. He received the Library of Congress Distinguished Service Award in 1983 for his many years of dedicated service and leadership in the areas of preservation and the use of new technologies. The American Library Association presented Mr. Welsh the Melvin Dewey Award in 1971 for his imaginative leadership of the Processing Department of the Library of Congress.

William Welsh joined the Library in 1947 after being discharged as a major from the U.S. Air Force. He started as a library assistant, and then progressed into various administrative positions, becoming director of the Processing Department in 1968. He was appointed to his present position in 1976.

Mr. Welsh was born in Weatherly, Pennsylvania, in 1919. He received an A.B. in philosophy (1940) from the University of Notre Dame, where he also attended law school from 1940 to 1941. In 1984 the University of Notre Dame bestowed upon him an honorary Doctor of Laws for "his imagination and good judgement . . . in this country and abroad as an innovative leader in librarianship."

Mr. Welsh has made many significant contributions to professional activities and organizations. In 1979 he headed the first official delegation of American librarians to China. An active member in the Council on Library Resources, he also serves on the National Library of Medicine Board of Regents, the Scarecrow Press Advisory Board, and the Maurice Tauber Foundation, Inc., Board of Directors. Since 1976 he has been a member of the Association of Research Libraries Task Force on National Library Network Development. Welsh has served on various committees in the International Federation of Library Associations and Institutions, including chairman of the Universal Bibliographic Control Committee. His activities include many important positions in the American Library Association and the National Commission on Libraries and Information Science which established the Advisory Group on National Bibliographic Control.

William Welsh's numerous contributions to library literature reflect his interests in the Library of Congress' role in national bibliographic control, cooperation amongst libraries and preservation programs.

The Impact of Technology on Libraries

Editor's Note: Mr. Welsh's lecture was preceded by a film entitled "Preservation: An Investment in the Future." The film provided a comprehensive overview of preservation activities at the Library of Congress.

For those of you who haven't been to the Library of Congress, it is difficult to describe because of its size. In many respects, it is like any other library. The difference is only in its complexity. It is difficult to envision the 532 miles of shelves housing the collections. If you have never traveled to Charleston, South Carolina, it probably doesn't mean anything, either. That's a little less than the mileage between Knoxville and Charleston. I used such an illustration at a meeting of the Board of Regents of the National Library of Medicine to describe the size of the Mansell catalog — that's the pre-1956 National Union Catalog. I said it was the equivalent of five alimentary canals laid end to end. I felt I had communicated. Another time, when I was taking a congressman through the law library collection where we have 80 miles of compact shelving to house our 1.6 million volumes, I felt I was not making an impression regarding the size. The congressman was from Pennsylvania, so I said that the number of volumes in that collection was equivalent to the number of people in the city of Philadelphia on Friday night. That worked.

Clearly, one of the greatest problems we are facing is the destruction of the printed word. It's not destruction caused by fire, flood, or war, but destruction caused by the acids in the paper of the materials which have been acquired since about 1850. This acidity can turn pages brittle in as little as twenty-five years. Based upon a scientific sample, only three percent of our total collections are acid free. As we said in the film which you have just seen, we do have over 80 million items. Over half of those items were acquired in the past 25 years. We will probably continue to acquire at the present rate and will double the size of the collection at the Library of Congress in the next 50 years. The paper acquired in that period will last no more than 25 to 100 years.

In an attempt to get some understanding about the dimension of the

problems, as I said, we recently conducted a study of the state of the paper in our printed book collection. We found that 25 percent of our collections are embrittled. For those of you who don't know what that means, here is a book taken from the shelves. I pick out a page at random. [The page crumbled easily in his hand.] Twenty-five percent of our collections are in that state. And what is happening at the Library of Congress is probably happening in every other library. In addition, this test we conducted also found that only something like 10 percent of our collections would withstand the folding test, which is one way of determining embrittlement. You could fold the pages in another 10 percent of the collections no more than three times. The paper would break like this [demonstration]. And another 14 percent could withstand folding three to ten times. This means that, roughly, 50 percent of the collections in your national library are in a very, very serious state of deterioration. But all is not lost because we have a couple of solutions to some of these problems.

We have a staff of chemists — yes, we have chemists in the Library of Congress — who have developed a process that will neutralize the acid in the paper. We first conducted this study in a laboratory condition using an ordinary pressure cooker like you have in your home. By exhausting the moisture in the books and then pumping into them vaporized diethyl zinc (DEZ), we found you can neutralize the acid in the book. We then went to the General Electric facility in Valley Forge, Pennsylvania. There, using space age technology, by stepping up the process, and by making it a little bit larger, we discovered that the process that we had developed was, in fact, worthy of further pursuit. We came back to Washington and talked to people at the National Aeronautics and Space Administration and asked if we could modify one of their vacuum chambers located at the Goddard Space Flight Center in Greenbelt, Maryland. Now this is a big chamber. That chamber you saw in the film was 15 feet long and has a diameter of eight-and-a-half feet. NASA agreed. Five thousand books were loaded into conventional milk crates similar to those you see in supermarket stores. We loaded the books, side by side, separated by a piece of hardware cloth and closed the chamber. Sixty-four pounds of water were vacuumed off and diethyl zinc was pumped in. When the chamber was opened, we found that, in fact, we had extended the life of those books 400 to 500 years. There were several little problems. We pumped in all of the diethyl zinc at the top and did not get 100 percent penetration. Consequently, we ran a couple of small scale tests and verified that by changing the DEZ mixture, the life of all books within the chamber could be extended.

The next step was to go to the Congress and get an authorization and funds to build our own DEZ plant. Next Wednesday we will appear before the Public Works Committee, and we have been assured that they are going to act favorably on our request. A plant that will handle 500,000 volumes a year at Fort Detrick, Maryland, is being planned. There are obviously some stumbling blocks, but we will get the money this year. Probably within a year and a half we will be ready to begin this process of deacidifying the current receipts. We are going to start by treating all of the new paper

materials. The reason we are doing that is because it is a philosophy of mine that you have to solve the problem head on before you can begin to worry about the backlog. About 300,000 volumes come in on a current basis, and we will treat those first and then treat 200,000 additional volumes from the collections. It is a long-term process. But at least we have a solution for those particular items.

PROBLEMS OF SELECTION

Probably the most difficult problem the Library of Congress faces is the question of selection. The saying that "someone's trash is someone else's treasure" perhaps best describes this dilemma. It doesn't make much difference what you are talking about. I recall a luncheon some years ago with Mortimer Adler, who is the well-known director of the Institute for Philosophical Research in Chicago. We were asking him the question, "What should we save?" He said it was probably easier to decide what we should throw away and suggested we could start by throwing away Zane Grey novels. I responded, "Then next year throw away *The Bobbsey Twins and the Doodlebug Mystery?*" He thought about that for a minute and thought maybe he was wrong. And I said, "What about Sears and Roebuck catalogs?" He could not see any earthly reason for keeping the Sears and Roebuck catalog. Today I thought I heard someone say we could throw away grocery lists. Maybe you could. It would depend on whose grocery lists they are. If it were Thomas Jefferson's grocery list you would not throw it away.

The DEZ preservation process is going to cost three to five dollars a volume, which is nominal indeed, because the alternative is to lose our cultural heritage. But what are we going to preserve? We don't really know as of now. We have the most unique collection of Uzbek materials in the Library of Congress. Should that be our first priority because it is unique and because it ought to be kept for the nation? We are not sure of that. But everything you heard this morning brings you back to this question. What should be preserved? You will get an argument from either side of the aisle of the importance of some materials. It does depend on who the person is and trying to guess who the Thomas Jeffersons of the next century are going to be. Alex Haley could not have produced *Roots* if he had not had access to some of the shipping schedules way, way back. Possibly, there is someone in this room who was born in a foreign country (like Kentucky). Surely there are many people in this room whose parents were born abroad. But there are almost no records of your coming and going. Do you realize there were 9,000 people who came over on the Mayflower? There must have been because there are at least 9,000 people who trace their heritage back to coming over on the Mayflower. But there are no current records maintained if a 747 jet arrives with 345 people on board. Maybe it's not important, maybe it is.

It is difficult to know what to acquire. But what we must do is to think of the whole library process as a continuum — if we acquire it, we must

catalog it, we must use it, and we must preserve it. We have not really done that systematically. Of all of the techniques that are available to us for preservation, the most successful program we have is one that the University of Tennessee shares with the Library of Congress, which is responsibly credited for the program. It is called Planned Deterioration, or doing nothing. What that means is that we really have no program to match the needs in the field of preservation. Your material, like ours, is deteriorating and we don't have the resources to prevent it. More importantly, we have not even made an attempt to gather the resources to address some of these concerns. We must put our minds to this now. We have to be concerned about buildings, good staff, and especially about getting raises for a good staff. But as important as these considerations are, we have to be concerned about preservation.

I want to show you an interesting technique for identifying materials which should be filmed or preserved. There are a lot of different techniques; this pen is one of them. When you put a spot of water on the page of a book and rub it with this pen, you will see what that scale says — whether it is alkali or acid. This process takes some time to do because you have to identify the condition of every item in your collection and record it in some way.

OPTICAL DISKS

The next method of preservation I want to talk about is optical disks, and I will give you a bit of history about this. Several years ago, as a member of the Board of Regents of the National Library of Medicine, I attended the dedication of Lister Hill Biomedical Center. Present in that group was Bill Baker, who was president of Bell Telephone Company. He suggested that I stop what I was doing and attempt to address the problems of applying optical disk technology to library operations. That sounded like an attractive way to perceive something new and innovative. But I wasn't completely convinced, so I went to the chief scientist at IBM and asked him what he knew about this technology. He said that Bill was right. Then I went to Fairchild and asked their chief scientist and he said there was something else, but possibly Bill was right and we ought to get on with this. I don't know if you know what a disk is, but it looks like a phonograph record. It is laser input for the most part and laser scanned. There is another generation now. This is an example of a compact audio disk, which I'll mention very briefly. You can see the color in it. This is the Sony disk, the first disk produced by the Library of Congress. It contains one hour of Bartok. This process is really another wave of the future. It is predictable that compact disks are going to take the place of cassettes. The quality of fidelity is really extraordinarily good, and we are planning to put quite a few of our music programs on compact disks. The other disks, such as the optical analog and digital, offer many advantages for library application.

In order to get on with our preservation technology investigation, we established three committees. The first was a technical committee because we

wanted to draw up specifications to get the equipment and the service. The next was a preservation committee to identify the categories of materials to be put on the disk. The third was a think tank committee because I don't like surprises, and their job was to tell me all of the terrible things that might happen — the worst scenario approach. All three committees did their jobs. We distributed two requests for proposals which described a three-year project. Nonprint, for technical reasons, was different from the print. For the Nonprint we employed the services of the Sony Corporation. They have just about completed all of their work. In other words, all of the filming has been done at the Library of Congress; for example, some motion pictures are on disks already. Ninety-thousand stills were filmed and captured. The optical disk is not regarded as the preservation medium for nonprint material as it is for print material. Contracts were awarded. I was persuaded that we should employ matrix management. This was really something new to me because in the Library of Congress we rely upon the hierarchy approach. If it happens to do with preservation and research services, we tell them to do it or they do it on their own. In this case, I had the opportunity to select the best person from the staff who I thought could handle this particular job. I selected Joe Price, the chief of the Science and Technology Division, to be in charge. Then we selected from the LC staff the best people who could work on all aspects of it. It has made a lot of the managers very uncomfortable, but it has been very, very productive and very, very successful. I would not recommend the system to anyone who is weak of heart, however.

The print hardware has been delivered to the Library of Congress with one exception — the jukebox, which we need for this operation. The electronic jukebox has been tested on the West Coast where the equipment is being made, and it works successfully. When it is delivered next week, we will then have all of the equipment we will need for the inputting and scanning process. Because it was soon clear to everybody that the greatest problems we faced were the problems of copyright and rights generally, an advisory committee, made up of six librarians and six persons from the private sector, including publishers, was established.

There are a number of advantages to disks, including random access, which is terribly important to us. Remote access is a by-product which we really did not anticipate in the beginning. This enables us to address the problems of what we call the fourth library building. In recent years we have occupied the James Madison Memorial Building, which is a building of 1,600,000 square feet at a cost of over $100,000,000. We will never, in my judgment, get another building like that on Capitol Hill. Nor, probably, should we. This technology will enable us to scan some of our materials, move them to storage, and access them as though they were on Capitol Hill. This has enormous possibilities for us. The space outside the Washington Beltway is considerably cheaper than it is on Capitol Hill and could serve as remote access when this is needed.

Another advantage to optical disk is compaction. Although we are not doing books as of yet, you can put the equivalent of about ten shelves of

books on a disk. I am sure that the following problem does not occur at UT or at any other library you may represent. We have a little problem known as not-on-shelf. That occurs when you go to look for an item and it is not there because someone else is using it. Of course, this is contrary to all good practice; you are not supposed to use the books, you are supposed to preserve them. This technology overcomes that problem. We have a buffering arrangement so that a number of people in the seven stations during this project can, in fact, access the same document at the same time. So it will virtually eliminate the problem of not-on-shelf.

We think that the preservation aspects of optical disks are quite good, too. If anything goes wrong with the disk, if it deteriorates, we can replicate it without any degradation which occurs in other media. It has the ability to enhance images. You can take an old piece of sheet music, scan it, and it produces a copy that is better than the original. Disks have random access, remote access, compaction, preservation, image enhancement, and they eliminate the NOS problem.

This project presents many challenges. If we continue it as a program, it is going to change the way we do business, and it will change the way *you* do business. For example, you may come to the Library of Congress looking for everything we have on the Battle of Shiloh. First, you would come to the Music Division, then go to the Prints and Photographs Division, the Manuscripts Division — and other reading rooms — to assemble all of the materials we have on the Battle of Shiloh. With this technology, that is not necessary. You can sit down before a terminal using the bibliographic apparatus that you and we have and call up the data you want. When you get it on the screen, you press the print button and it will print a copy of the information, and, at the same time, you may even hear songs related to the battle.

For materials exposed to that process, we are not going to use LC Classification or Dewey in the ways we use them now. Random access to the records themselves gives us another alternative to the power of classification which we have not always used successfully.

Now I don't think that this is going to apply immediately to books because I think that we are going to want to have books in the present format. There will be the impact, of course, of electronic publishing, and that is one of the things we are addressing with the advisory committee. Some materials, primarily journal literature and other types of data like newspapers, are clearly going to be susceptible to this format. But you can imagine what that is going to do, so we have to look at the LC organization. We have to look at the people; people have to be retrained. As I said yesterday at Oak Ridge, we have discovered the advantages of shared cataloging. We should be smart enough to move people from technical services to reference because I think that the savings is going to be enormous on one side, but the costs of accessing data are going to be very heavy on the other side. You will have to have fully trained research and reference people to be the interface between libraries and the users, at least for the present time.

When the public comes to the Library of Congress, we have two people to help them with the eight public terminals now available. In the future I think we will have to have a ratio more like one librarian to every four to five terminals.

That's the way I think it is going to be in addressing the greatest problems of preservation and services. There may be some other implications, however. Quite a few years ago there was a government official who decided he wanted to establish his own library. It grew very quickly. In a short order he had 670,000 volumes. Then there was a great fire. Some tried to help him put out the fire but they didn't succeed. There were two views of that fire. One group viewed it as a great tragedy because classical antiquity was destroyed. Another group viewed it as great fortune because if they had not had the fire, every inch of Egypt would be now occupied by the Alexandrian Library. I think we have to be aware of where we are going. Our time here on earth has been very short, especially in the U.S.A., but we have developed enormous collections. We have to look at the future. Are we going to continue to acquire at the present rate and are we going to preserve all of it? I think if we are going to do it, we can't do it alone. The University of Tennessee must work with Oak Ridge and the Library of Congress and all of the other consortia that are available to us. We must do it together. We can't do it alone.

UNIVERSITY OF TENNESSEE LIBRARY LECTURES

No. 1. Book Classification in University Libraries, by Maurice F. Tauber.
No. 2. The Library in the Graduate Program of Institutions of Higher Education in the Southeast, by Louis Round Wilson.
No. 3. The Library's Function in Education, by John E. Burchard.
No. 4. Development of Research Collections in University Libraries, by Robert B. Downs.
No. 5. The Study of Reading Effects, by Lester Asheim.
No. 6. The Magnetic Field, by Lawrence Clark Powell.
No. 7. Liberal Education, Specification, and Librarianship, by Jack Dalton.
No. 8. The Research Library in Transition, by Herman H. Fussler.
No. 9. A Rare Book Is a Rare Book, by Robert Vosper.
No. 10. Sources of Support for Libraries in American Universities, by Benjamin Edward Powell.
No. 11. The Undergraduate and His Library, by Louis Shores.
No. 12. Divisional Organization in the University Library, by Archie L. McNeal.
No. 13. The Growing Giant: The Science-Technology Library, by Dorothy M. Crosland.
No. 14. The University Library in Violent Transition, by Ralph E. Ellsworth.
No. 15. The International Role of the University Library, by William S. Dix.
No. 16. The Public Relations Activity of a University Librarian, by James T. Babb.
No. 17. Academic Science and the University Library, by David Kaser.
No. 18. Library Interaction and Interdependence, by Stephen A. McCarthy.
No. 19. Librarianship Today — Crisis or Change, by Jerrold Orne.
No. 20. Twentieth-Century Scholarship and the Research Library: A Marriage of Convenience, by John H. Berthel.
No. 21. Automation and the Academic Library, by W. Carl Jackson.
No. 22. "... Concerning the Erecting of a Library," by Gustave A. Harrer.
No. 23. Interlibrary Loan — Library Cooperation, by Arthur M. McAnally.
No. 24. Continuing Education for Librarians: The Role of the Learner, by Martha Jane K. Zachert.
No. 25. The Historian, the Detective, and the Librarian, by Robin W. Winks.
No. 26. The Quality of Scholarly Writing and Scholarly Publishing in America Today, by Morris Philipson.
No. 27. The View From the Top of the Tower of Babel: Prospects for Academic Library Growth in the Near Future, by Daniel Gore.
No. 28. Copyright versus Intellectual Property, by Julius Jay Marke.
No. 29. The American Librarian's Dream: Full Bibliographic Control with Complete Freedom of Access, by Doralyn Hickey.
No. 30. Documenting the History of Black Folk Music in the United States: A Librarian Views Interdisciplinary Research, by Dena J. Epstein.
No. 31. The Impact of the Second Edition of the *Anglo-American Cataloguing Rules* on the Catalogues of the Future, by Michael Gorman.
No. 32. Matching Commitments to Needs and Resources: Reflections on Managing the Academic Library in Hard Times, by Richard DeGennaro.
No. 33. Writers as Readers, by Frances Neel Cheney.

The lectures have been published in groups of three. The first volume was published in 1952 as Volume 55, no. 1, of *The University of Tennessee Record;* the second volume was published in 1954 as Volume 30, no. 6 of *The University of Tennessee Record, Extension Series.* Beginning with no. 7, the lectures have had their own series, *University of Tennessee Library Lectures.*